

substrate,” to “a semiconductor bare chip having a first transistor including wire bonded to the alumina substrate.” Applicants respectfully disagree with the Examiner that this is an informality that requires correction. Applicants submit that it is clear that the element “a semiconductor bare chip having a first transistor wire bonded to the alumina substrate” contains: 1) a semiconductor bare chip which has 2) a first transistor and this first transistor 3) is connected to the alumina substrate through 4) a wire bond. Applicants further submit that the change required by the Examiner is grammatically incorrect and thus likely to cause confusion, unlike the element presently recited, which is in grammatically correct English. For these reasons, Applicants respectfully request that the Examiner withdraw the objection in the next Office Action.

Rejection of Claims

In the Office Action, Claims 1-6 were rejected under 35 U.S.C. §102(b) as being anticipated by Furutani (U.S. Patent 5,561,592). Applicants traverse the rejection.

Claim 1 recites an electronic circuit unit that comprises a semiconductor bare chip having a first transistor. The first transistor is wire bonded to the alumina substrate. In addition, the electronic circuit comprises thin film circuit elements formed on an alumina substrate. These thin film circuit elements include base bias voltage dividing resistors and an emitter resistor. The current of the first transistor is set by trimming only the thin film emitter resistor.

One advantage of using thin film circuit elements, rather than chip components for resistors (as well as other circuitry), is that the miniaturization of the circuitry is not as limited as when using chip components. Narrowing of the pitch between chip components is limited because many of these need to be mounted on a substrate such that soldered portions of individual circuit components are prevented from short-circuiting. Use of thin film components permits high density circuitry to be fabricated.

Furthermore, in conventional electronic circuits having components including thin film resistors, it has been necessary to trim the resistance of both emitter and base bias voltage dividing resistors to adjust the output of the circuit. Such output adjustment is required if differences exist between the actual and desired resistances of the resistors, causing the collector current of the transistor to be vastly

altered from the desired collector current. However, the arrangement of Claim 1 requires trimming of only the thin film emitter resistor to adjust the collector current, thereby permitting trimming at one location to adjust the output.

Furutani does not anticipate or disclose such an arrangement. Furutani discloses a conventional arrangement that includes a bias resistor having a high power-withstanding capability and a trimming bias resistor that is not required to have a high power-withstanding capability. However, Furutani teaches that these resistors are specifically chip resistors, which may be replaced (see col. 7, lines 63-67 as well as col. 5, line 30 which states that the thin film resistors are cross-hatched in the figures). Moreover, Furutani does not teach specifically either an emitter resistor or the base bias voltage dividing resistors. Nor does Furutani teach in particular that of these resistors only the emitter resistor is trimmed to adjust the transistor current.

The passage cited by the Examiner relating to the resistors merely states that placement of one of the trimming bias resistors may be inside or outside an enclosure, as well as the fact that the trimming bias resistors do not have to be able to withstand a large amount of heat (i.e. a relatively small amount of current travels through the trimming bias resistor as compared with the bias resistor). Furutani in fact specifically teaches away from the arrangement of amended Claim 1, teaching that 1) multiple trimming bias resistors exist and 2) that a smaller amount of current travels through the trimming bias resistor than through the bias resistor. As the current through the emitter resistor may not be particularly small, Furutani teaches that the trimming bias resistor is not an emitter resistor.

For at least these reasons, Furutani does not anticipate or disclose the arrangement of amended Claim 1. Thus, amended Claim 1 is patentable over Furutani.

Claim 3 recites that the thin film base bias voltage dividing resistors are formed proximate to each other on the alumina substrate. One advantage of such an arrangement is that, although the actual values of the base bias voltage dividing resistors may differ from the desired values, because these resistors are formed proximate to each other, the ratio of the individual differences is almost equal. Consequently, trimming of these resistors may not have to occur. In addition, the base bias voltage dividing resistors are disposed efficiently on the limited space of the alumina substrate.

In addition to reasons similar to those above, Furutani does not anticipate or suggest an arrangement in which the thin film base bias voltage dividing resistors are formed proximate to each other on the alumina substrate.

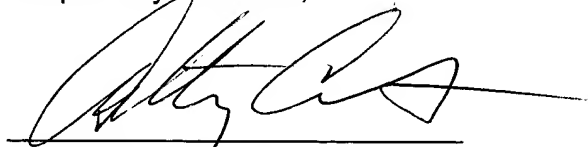
For at least these reasons, Furutani does not anticipate or disclose the arrangement of Claim 3. Thus, Claim 3 is patentable over Furutani.

In addition, new Claims 7-11 are independently patentable over Furutani. Specifically, Furutani does not anticipate or disclose that the thin film emitter resistor is formed more distal to the first transistor than the thin film base bias voltage dividing resistors, as recited in Claims 7 and 9, that the thin film resistors that are formed by the same thin film forming process, as recited in Claims 8 and 10, or, as above, that out of the base bias voltage dividing resistors and an emitter resistor of the first transistor, only the emitter resistor is trimmed to set a current value of the first transistor, as recited in Claim 11. For at least these reasons, Claims 7-11 are patentable over Furutani.

Conclusion

In view of the amendments and arguments above, Applicants respectfully submit that all of the pending claims are in condition for allowance and seek an early allowance thereof. If for any reason the Examiner is unable to allow the application in the next Office Action and believes that a telephone interview would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned agent or attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Anthony P. Curtis', is written over a horizontal line.

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APPENDIX A
Application Serial No. 09/870,415
ELECTRONIC CIRCUIT UNIT THAT IS SUITABLE FOR MINIATURIZATION
AND SUITABLE FOR SIMPLE OUTPUT ADJUSTMENT
Akiyuki Yoshisato et al.

In the Claims

Please amend Claim 1 as follows:

1. (Amended) An electronic circuit unit comprising thin film circuit elements including capacitors, resistors, and inductance elements formed on an alumina substrate, and a semiconductor bare chip having a first transistor wire bonded to the alumina substrate, wherein only an emitter resistor, out of a base bias voltage dividing resistors and the emitter resistor of the first transistor, is trimmed to set a current value of the first transistor.